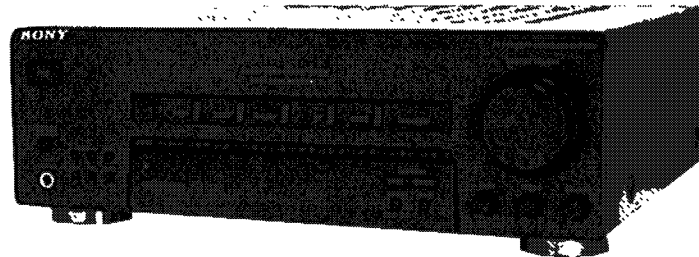


STR-V200

SERVICE MANUAL

US Model



This receiver incorporates the Dolby* Pro Logic Surround system.

* Manufactured under license from Dolby Laboratories Licensing Corporation.
DOLBY, the double-D symbol $\square\square$ and "PRO LOGIC" are trademarks of Dolby Laboratories Licensing Corporation.

POWER OUTPUT AND TOTAL HARMONIC DISTORTION

With 8 ohm loads, both channels driven, from 20 - 20,000 Hz; rated 50 watts per channel minimum RMS power, with no more than 0.09% total harmonic distortion from 250 milliwatts to rated output.

Amplifier section

POWER OUTPUT

Stereo mode (8 ohms 20 Hz - 20 kHz, THD 0.09%)
50 W + 50 W

Surround mode (8 ohms at 1 kHz, THD 0.8%)
Front: 50 W/ch
Center*: 50 W
Rear*: 50 W/ch
* Depending on the surround mode and the source, sound will not be output.

SPECIFICATIONS

Frequency response

CD, TAPE/MD, TV/DBS,
VIDEO:
10 Hz - 50 kHz ± 1 dB

Inputs

	Sensitivity	Impedance	S/N (weighting network, input level)
CD	200 mV		82 dB
TAPE/MD, TV/DBS, VIDEO	150 mV	50 kilohms	(A, 150 mV)

Outputs

TAPE/MD REC OUT:
Voltage: 150 mV,
Impedance: 10 kilohms
VIDEO AUDIO OUT:
Voltage: 150 mV,
Impedance: 10 kilohms
MIX AUDIO OUT:
Voltage: 2 V
Impedance: 10 kilohms

PHONES:

Accepts low and high impedance headphones

MUTING

Full mute

BASS BOOST

+10 dB at 70 Hz

TONE

± 8 dB at 100 Hz and 10 kHz

FM tuner section

Tuning range 87.5 - 108.0 MHz

Antenna terminals

300 ohms, balanced
75 ohms, unbalanced

Sensitivity

Mono: 18.3 dBf, 4.5 μ V
Stereo: 38.3 dBf, 45 μ V

Usable sensitivity

11.2 dBf, 2 μ V (IHF)

S/N

Mono: 0.3%
Stereo: 0.5%

— Continued on next page —

FM STEREO/FM-AM RECEIVER



SONY®

Harmonic distortion at 1 kHz	0.5%
Separation	45 dB at 1 kHz
Frequency response	30 Hz - 15 kHz ± 1.5 dB
Selectivity	60 dB at 400 kHz

AM tuner section

Tuning range	With 10 kHz interval: 530 - 1710 kHz**
Antenna	Loop antenna
Usable sensitivity	50 dB/m (at 1,000 kHz)
S/N	54 dB (at 50 mV/m)
Harmonic distortion	0.5% (50 mV/m, 400 Hz)
Selectivity	At 10 kHz: 40 dB

** You can change the AM tuning interval to 9 kHz or to 10 kHz. After tuning in any AM station, turn off the receiver. Hold down the TUNING + button and press the I/⏻ button. All preset stations will be erased when you change the interval. To reset the interval to 10 kHz, repeat the procedure.

General

System	Tuner section: PLL quartz-locked digital synthesizer system Preamplifier section: Low-noise NF type equalizer Power amplifier section: Pure-complementary SEPP
--------	---

Power requirements	120 V AC, 60 Hz
--------------------	-----------------

Power consumption	150 W
-------------------	-------

AC outlets	1 switched, 120 W/1 A maximum
------------	-------------------------------

Dimensions	355 × 120 × 325 mm (14 × 4 $\frac{3}{4}$ × 12 $\frac{3}{4}$ inches) including projecting parts and controls
------------	---

Mass (Approx.)	5.9 kg (13 lb)
----------------	----------------

Supplied accessories

- FM wire antenna (1)
- AM loop antenna (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth Ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

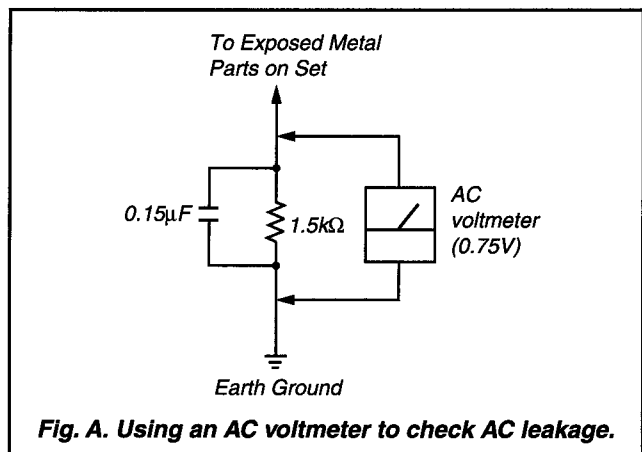


Fig. A. Using an AC voltmeter to check AC leakage.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SECTION 1 SERVICING NOTE

FACTORY SET

Mode which sets the preset settings of the unit to that at shipment.

Procedure:

While pressing the **VIDEO** button and **TV/DBS** button together, press the **I/⏻** button to turn on the power.
“FACTORY” will be displayed and factory settings executed.

INITIALIZATION

Mode which erases all the preset settings of the unit.

Use this mode when returning the unit to the customer.

Procedure:

While pressing the **VIDEO** button, **TV/DBS** button, and **TAPE/MD** button together, press the **I/⏻** button to turn on the power.
“INITIAL” will be displayed and initialization executed.

FLUORESCENT INDICATOR TUBE LIGHTING CHECK

Mode which lights up the whole fluorescent indicator tube or partially.

Procedure:

While pressing the **TV/DBS** button and **TAPE/MD** button together, press the **I/⏻** button to turn on the power.
The fluorescent indicator tube will light up in about 0.5 seconds, and then start to light up partially. After partial lighting completes, the **BASS BOOST** indicator will light up, “FINISH” will be displayed, indicating that fluorescent indicator tube lighting check has completed.

SWITCHING OF 9 kHz/10 kHz AM CHANNEL STEP

The AM channels of this unit can be switched between 9 kHz and 10 kHz.

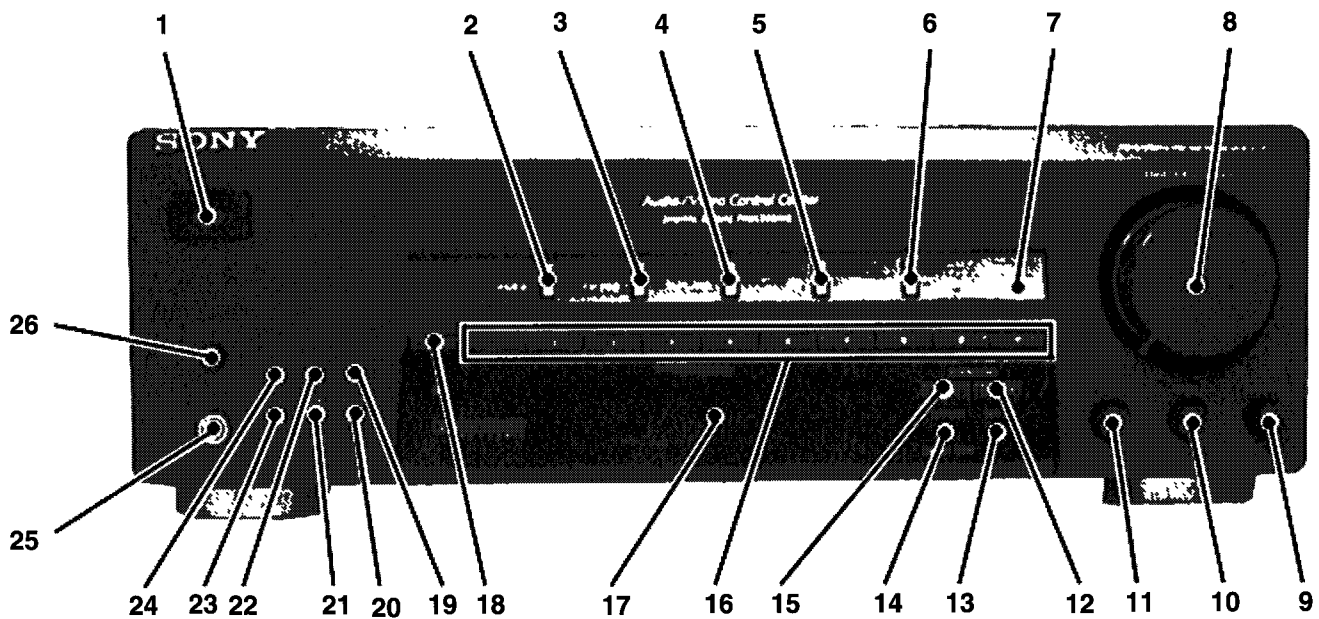
Procedure:



Set FUNCTION to AM and turn off the power.

While pressing the **TUNING +** button, press the **I/⏻** button to turn on the power.
“9 k STEP” or “10 k STEP” will be displayed, and the channel step will be switched.

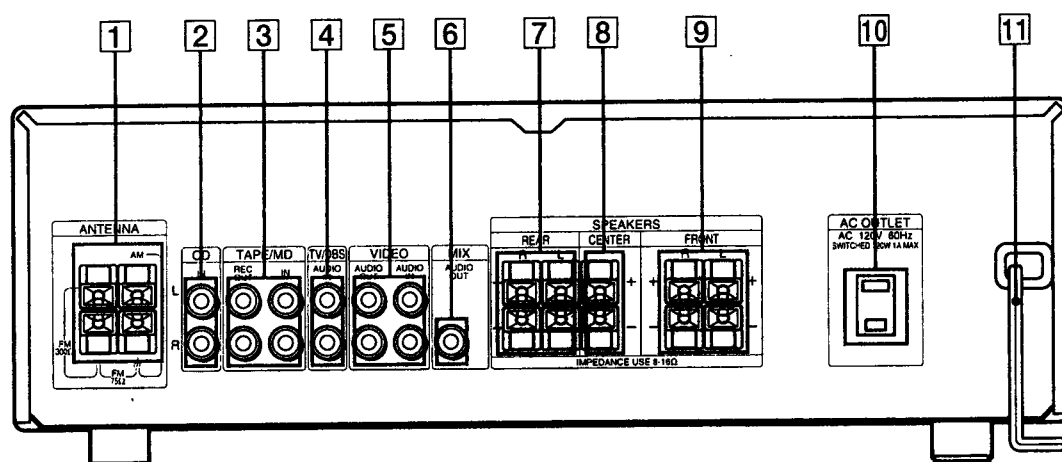
SECTION 2 GENERAL

Front Panel Descriptions



- 1 I/⏻ button
- 2 VIDEO button
- 3 TV/DBS button
- 4 TAPE/MD button
- 5 CD button
- 6 TUNER button
- 7 BASS BOOST indicator
- 8 MASTER VOLUME knob
- 9 BALANCE knob
- 10 TREBLE knob
- 11 BASS knob
- 12 SURROUND ON/OFF button
- 13 SET UP button
- 14 EFFECT/DELAY TIME button
- 15 SURROUND MODE button
- 16 Numeral (1 to 0) button
- 17 Display window
- 18 DIRECT button
- 19 SHIFT button
- 20 MEMORY button
- 21 AM button
- 22 TUNING + button
- 23 FM button
- 24 TUNING - button
- 25 PHONES jack
- 26 SPEAKERS  ON/ OFF button

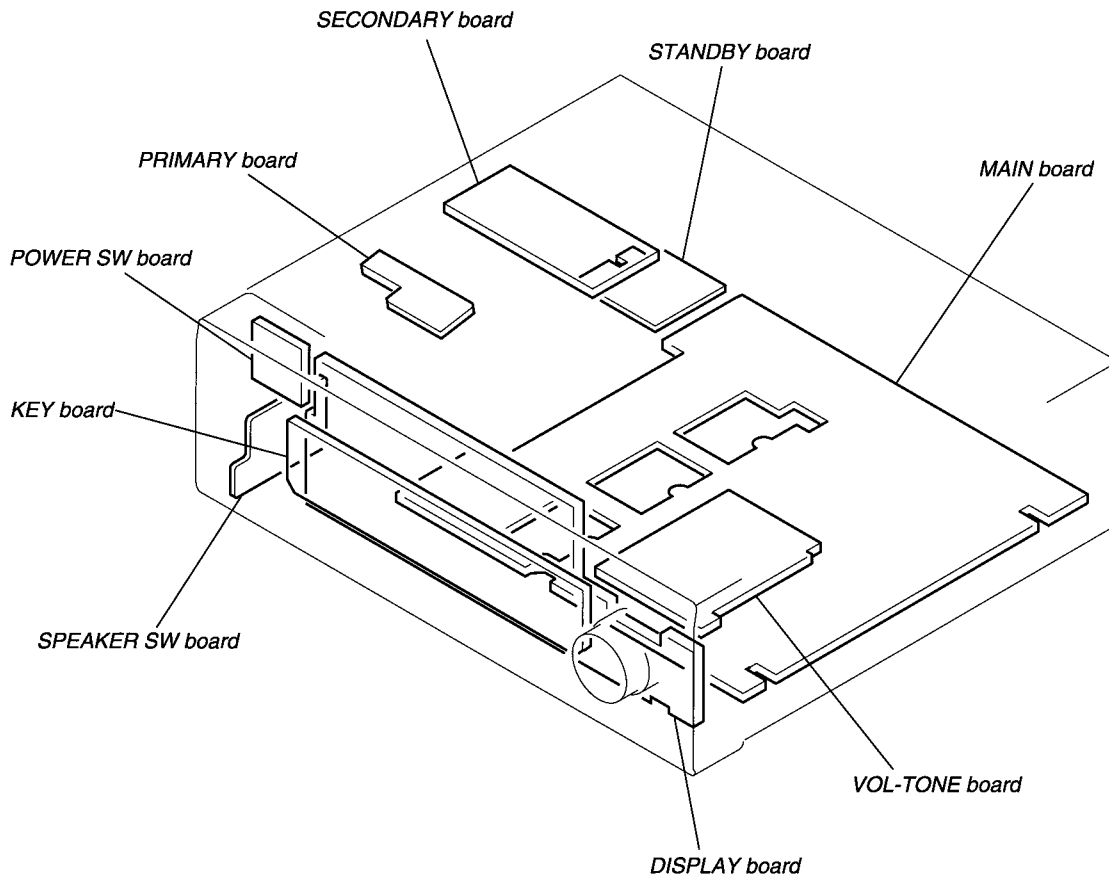
Rear Panel Descriptions



- 1** ANTENNA
- 2** CD
- 3** TAPE/MD
- 4** TV/DBS
- 5** VIDEO
- 6** MIX AUDIO OUT
- 7** REAR
- 8** CENTER
- 9** FRONT
- 10** AC OUTLET
- 11** AC power cord

SECTION 3 DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:

- All capacitors are in μF unless otherwise noted. pF : μpF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- Δ : internal component.
- : nonflammable resistor.
- : panel designation.

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

- : B+ Line.
- : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
no mark : FM

- Voltages are taken with a VOM (Input impedance $10\text{ M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
 : FM

For printed wiring boards.

Note:

- : parts extracted from the component side.
- : Pattern of the conductor side.

Caution:

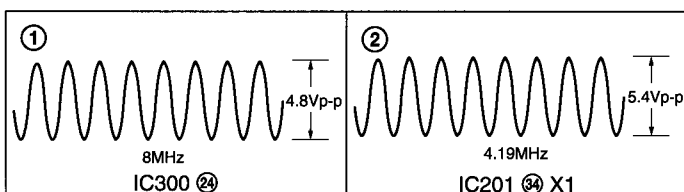
Pattern face side:	Parts on the pattern face side seen from the pattern face are indicated.
Conductor Side)	
Parts face side:	Parts on the parts face side seen from the parts face are indicated.
(Component Side)	

• Indication of transistor



These are omitted

WAVEFORMS

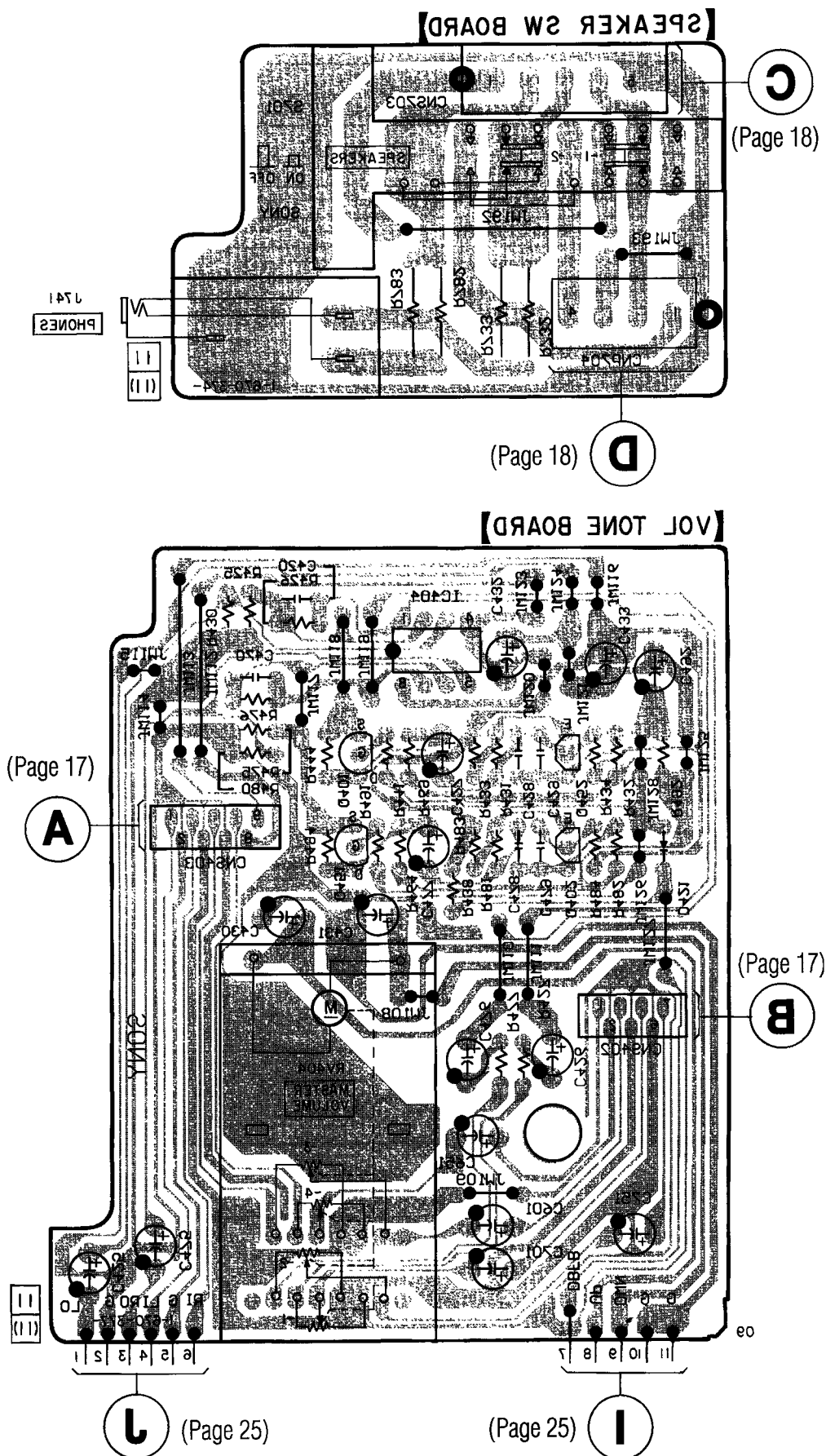


3-11. PRINTED WIRING BOARD – PANEL SECTION –

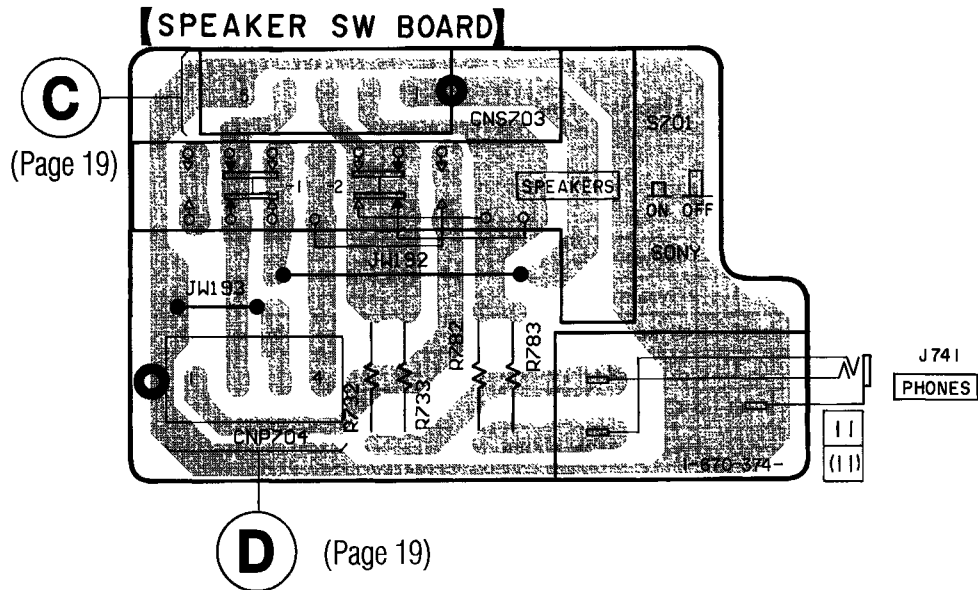
• See page 6 for Circuit Boards Location.

(Conductor Side)

Note: Conductor side equal an inversion of component side.



(Component Side)



3-12. IC PIN FUNCTIONS

• IC201 uPD78044FGF-064-3B9

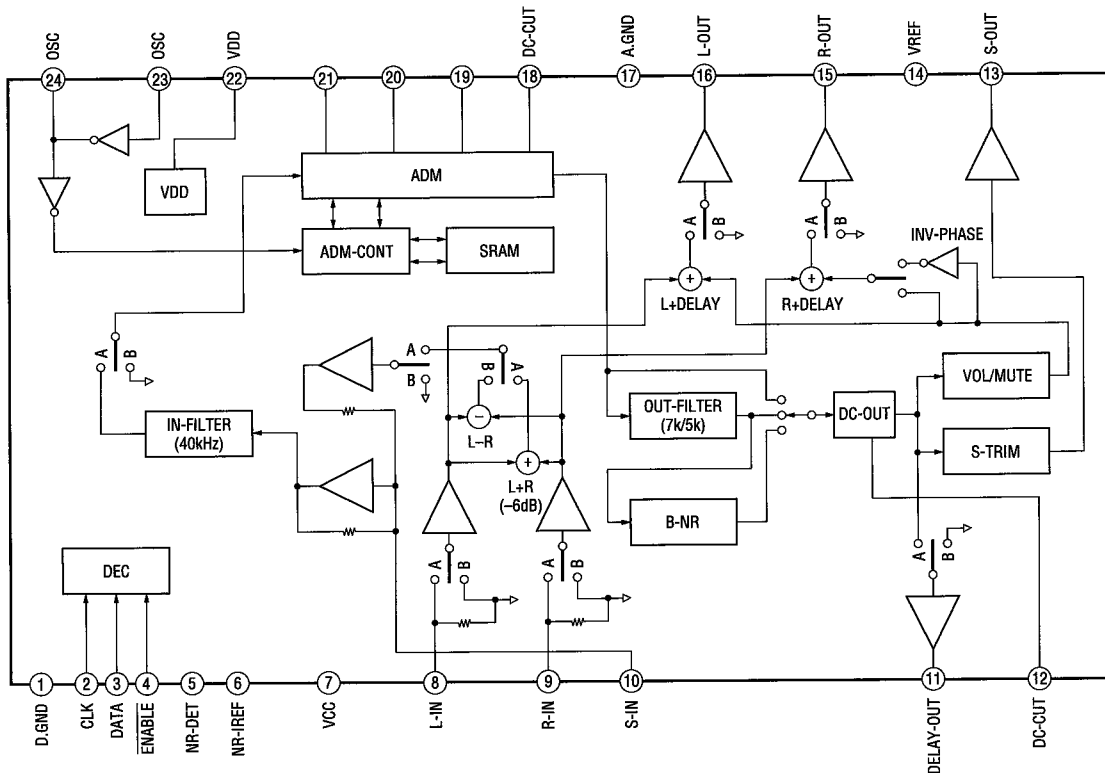
Pin No.	Pin Name	I/O	Function
1	DIG7	O	Fluorescent indicator tube drive
2	DIG6	O	
3	DIG5	O	
4	DIG4	O	
5	DIG3	O	
6	DIG2	O	
7	DIG1	O	
8	+5V	—	Power supply (+5V)
9	$\overline{S. CLK}$	I	System clock
10	$\overline{S. DATA}$	I	System data
11	$\overline{PLL. DATA}$	I	PLL data input from TU001
12	S. CE (LC7288)	O	Chip enable output
13	$\overline{S. CE}$ (LV1010)	O	Chip enable output
14	REAR-R	I	Input for model select (Connected to ground)
15	BRIDGE	I	Protector detect input
16	$\overline{PROTECT}$	I	Protector detect input
17	\overline{RESET}	I	System reset terminal
18	$\overline{AUTO-STOP}$	I	Auto stop detect input
19	$\overline{STEREO-IN}$	I	Stereo detect input
20	AVSS	—	Ground (Not used)
21	SP-RY	O	Speaker relay drive
22	SURR-RY	O	Surround Relay
23	POWER-RY	O	Power relay drive
24	AVSS	—	Ground
25	SIGNAL	I	A/D signal input terminal
26	A/D3	I	A/D3 key input terminal
27	A/D2	I	A/D2 key input terminal
28	A/D1	I	A/D1 key input terminal
29	AVDD	—	Power supply (+5V)
30	AV. REF	—	Reference voltage (+5V)
31	GND	—	Ground
32	NC	—	Not used (Open)
33	VSS	—	Ground
34	X1	I	System clock (4.19MHz)
35	X2	O	System clock (4.19MHz)
36	IC. MUTE	O	Mute drive output for μ PD2581V (IC701)
37	$\overline{PROLOGIC}$	O	Plologic LED (Not used)
38	$\overline{SIMULATED}$	O	CINEMA STUDIO LED (Not used)
39	\overline{HALL}	O	HALL LED (Not used)
40	T. MUTE	O	Tuner mute drive output

Pin No.	Pin Name	I/O	Function
41	VOLUME UP	O	Volume up
42	VOLUME DOWN	O	Volume down
43	STANDBY	O	Standby LED drive (Not used)
44	SYS. POWER	I	System power ON/OFF
45	RDS. DATA. IN	I	RDS data input (Not used)
46	RDS. CLK. IN	I	RDS clock input (Not used)
47	STOP	I	Stop signal input from NJM2103D (IC950)
48	VSS	—	Ground
49	SIRCS	I	Sircs signal input
50	POWER SW	I	Power switch input terminal
51	5.1ch LED	—	5.1ch LED drive
52	+5V	—	Power supply (+5V)
53	BASS BOOST	I	Bass boost LED drive
54	FUNC. MUTE	O	Line mute drive
55	SL MUTE	O	SL mute drive
56	VERSION	I	Input for model select
57	K14	I	Key in 4
58	K13	I	Key in 3
59	K12	I	Key in 2
60	K11	I	Key in 1
61	SR MUTE	O	SR mute drive
62	S15	O	Not used
63	S14	O	Fluorescent indicator tube drive
64	S13	O	
65	S12	O	
66	S11	O	
67	S10	O	
68	S9	O	
69	S8	O	
70	S7	O	
71	VLOAD	—	Connect to -24V
72	S6	O	Fluorescent indicator tube drive
73	S5	O	
74	S4	O	
75	S3	O	
76	S2	O	
77	S1	O	
78	DIG10	O	Fluorescent indicator tube drive
79	DIG9	O	
80	DIG8	O	

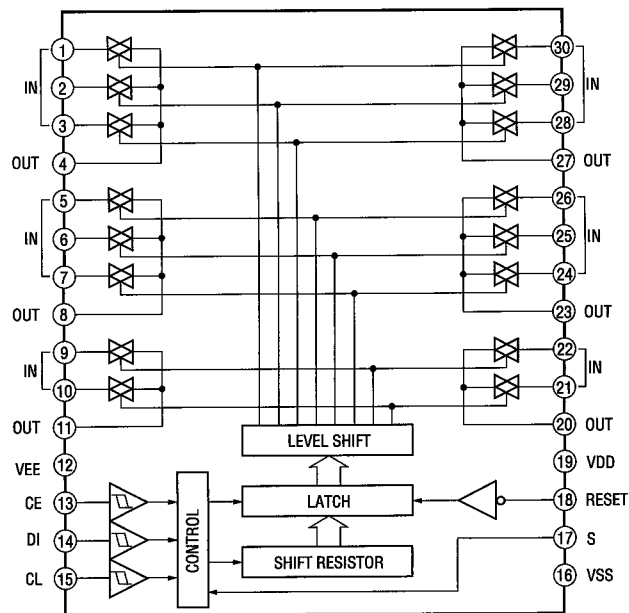
6-13. IC BLOCK DIAGRAMS

• Main section

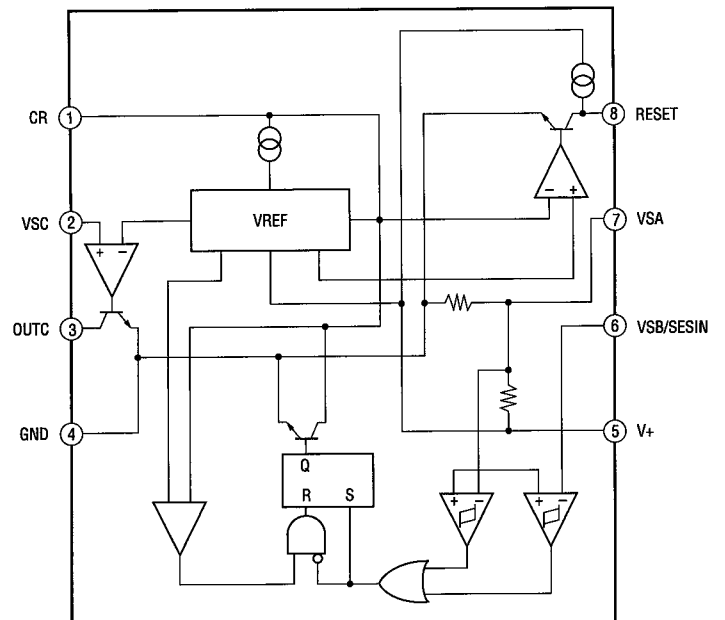
IC300 LV1016



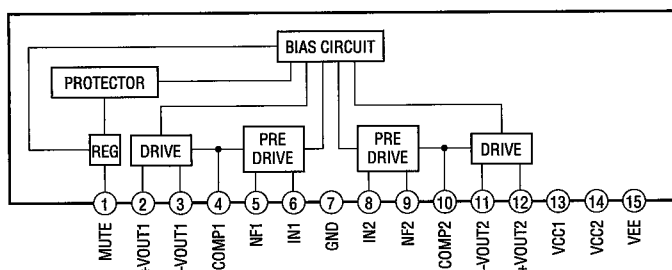
IC401 LC7822



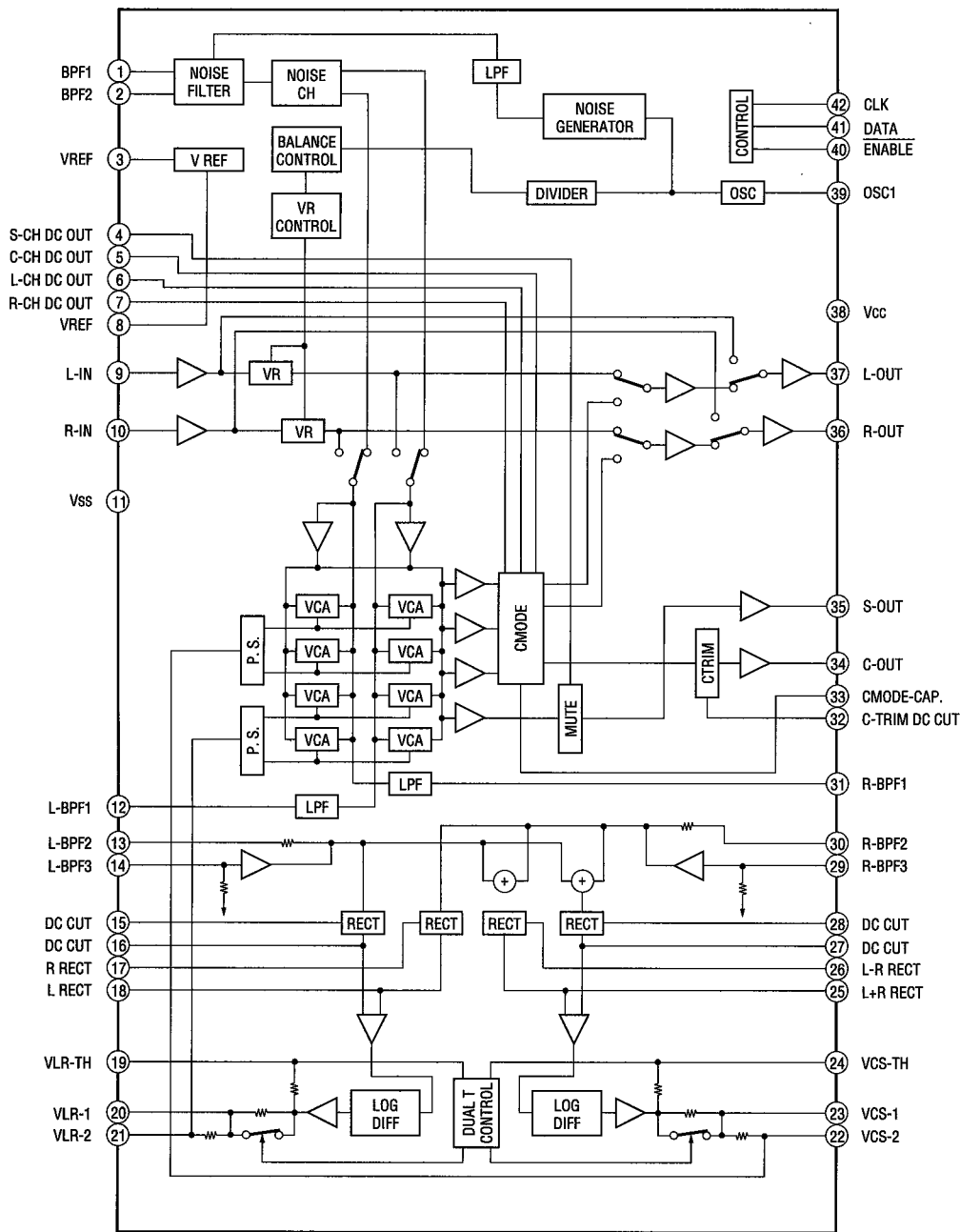
IC950 NJM2103D



IC701, 702 uPC2581

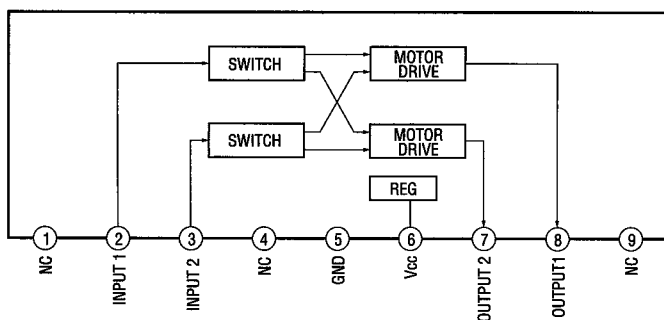


IC301 LA2786



• Display section

IC202 BA6208



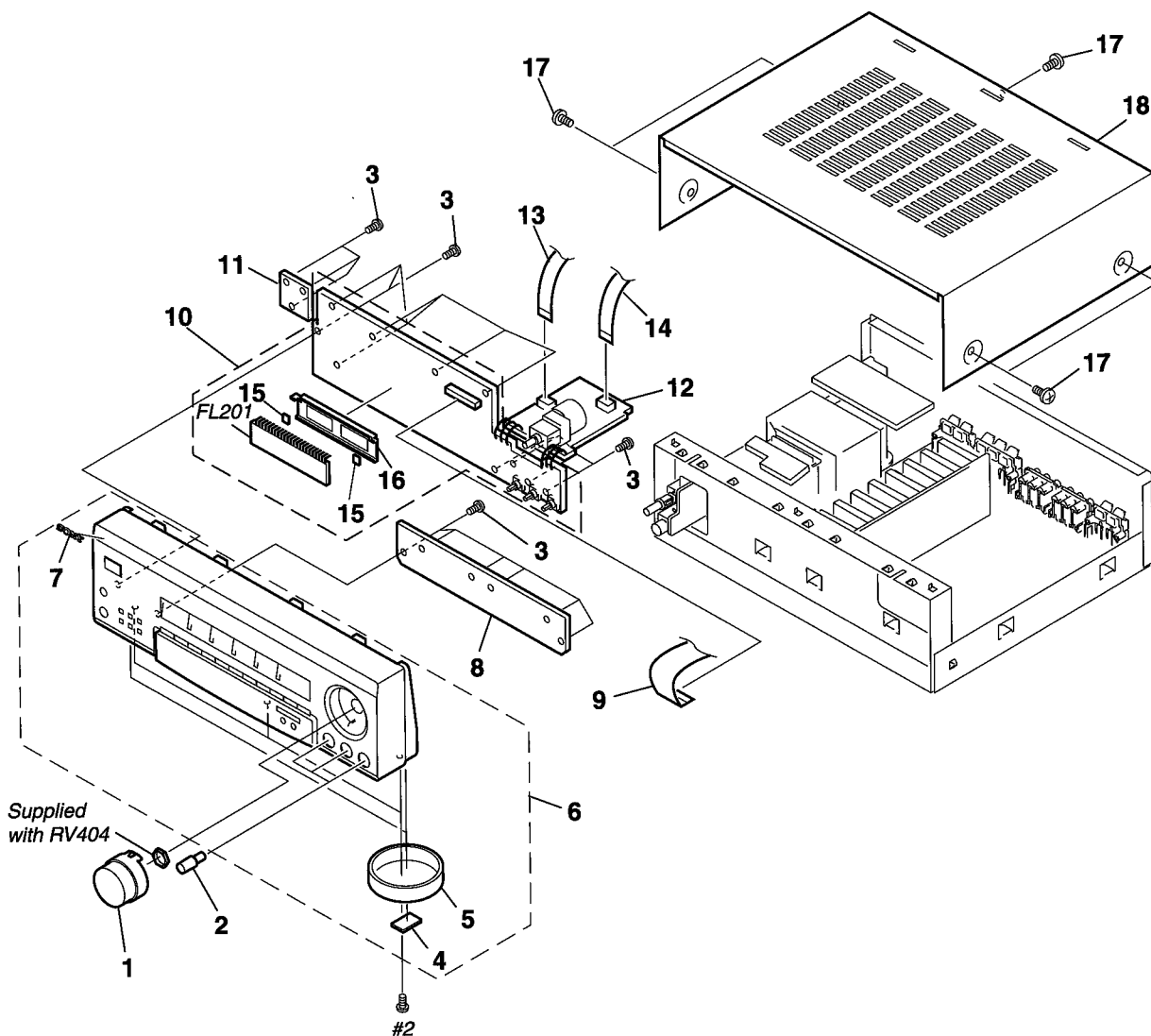
SECTION 4 EXPLODED VIEWS

NOTE:

Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items. The mechanical parts with no reference number in the exploded views are not supplied. Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

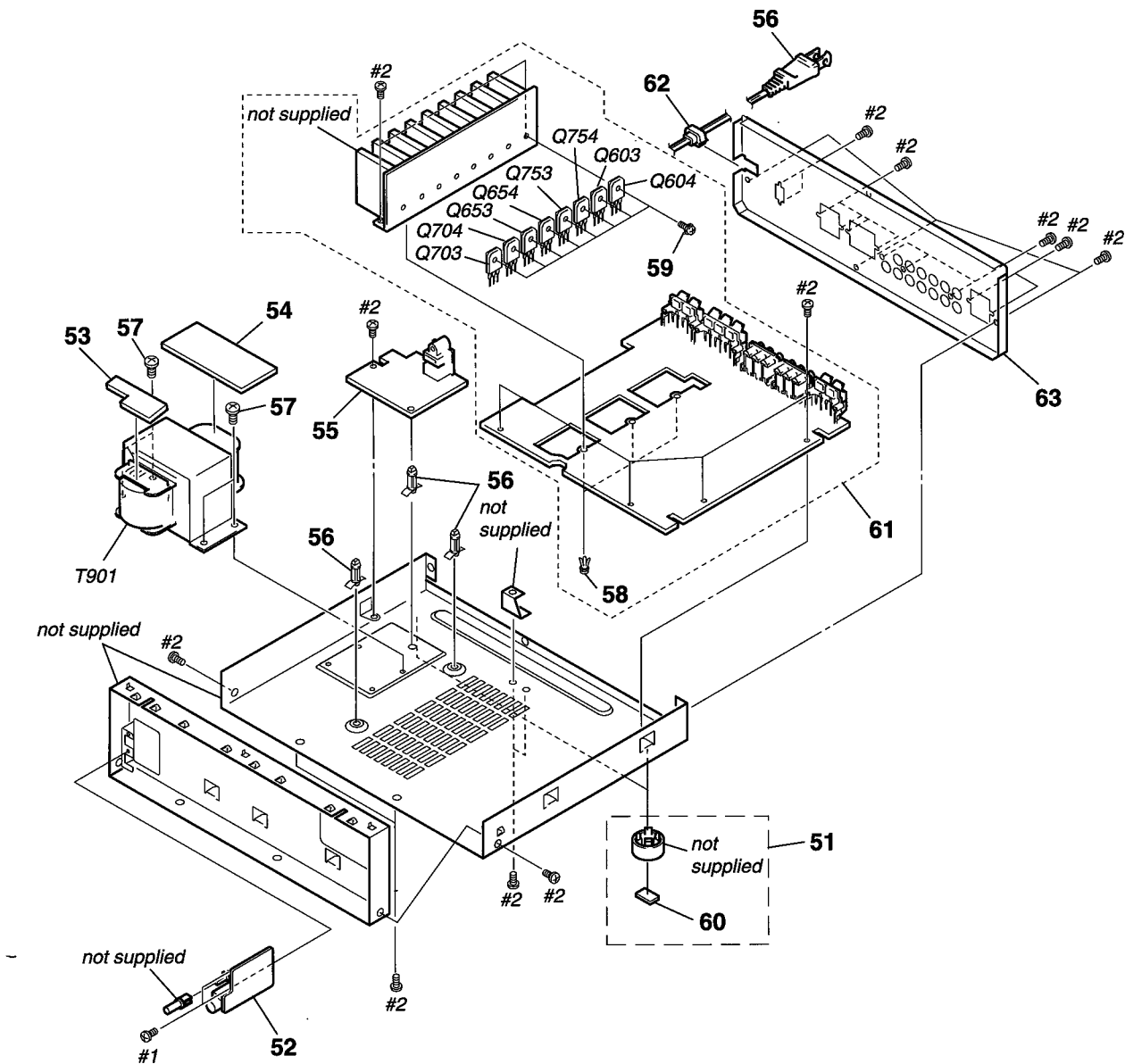
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

1. CASE SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	A-4411-215-A	KNOB ASSY		* 11	1-670-378-11	POWER SW BOARD	
2	4-210-373-01	KNOB (EQ)		* 12	A-4414-896-A	VOL-TONE BOARD	
3	4-951-620-01	SCREW (2.6X8), +BVTP		13	1-782-074-11	WIRE (FLAT TYPE) (7 CORE)	
4	4-978-398-21	CUSHION		14	1-782-075-11	WIRE (FLAT TYPE) (9 CORE)	
5	4-977-593-01	RING (DIA. 50), ORNAMENTAL		* 15	4-921-941-01	CUSHION (FL)	
6	A-4411-214-A	PANEL ASSY, FRONT		* 16	4-210-383-01	HOLDER (FL TUBE)	
7	4-996-698-41	EMBLEM, SONY			3-704-366-31	SCREW (CASE) (M3X6)	
8	A-4414-899-A	KEY BOARD		* 18	4-210-365-01	CASE	
9	1-782-100-11	WIRE (FLAT TYPE) (23 CORE)		FL201	1-517-662-11	INDICATOR TUBE, FLUORESCENT	
10	A-4414-898-A	DISPLAY BOARD, COMPLETE					

4-2. CHASSIS SECTION



The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
51	X-4946-543-1	FOOT (SMALL) ASSY		62	3-703-244-00	BUSHING (2104), CORD	
* 52	1-670-374-11	SPEAKER SW BOARD		* 63	4-210-367-01	PANEL, BACK	
* 53	1-670-376-11	PRIMARY BOARD		Q603	8-749-010-25	IC MN2488-OPY-M	
* 54	1-670-375-11	SECONDARY BOARD		Q604	8-749-010-26	IC MP1620-OPY-M	
* 55	1-670-373-11	STANDBY BOARD					
				Q653	8-749-010-25	IC MN2488-OPY-M	
△ 56	1-690-609-21	CORD, POWER		Q654	8-749-010-26	IC MP1620-OPY-M	
57	4-900-386-01	SCREW		Q703	8-749-010-25	IC MN2488-OPY-M	
58	4-210-380-01	RIVET, NYLON		Q704	8-749-010-26	IC MP1620-OPY-M	
59	3-905-609-01	SCREW (TRANSISTOR)		Q753	8-749-010-25	IC MN2488-OPY-M	
* 60	4-978-398-21	CUSHION					
				Q754	8-749-010-26	IC MP1620-OPY-M	
* 61	A-4414-900-A	MAIN BOARD, COMPLETE		△ T901	1-431-258-11	TRANSFORMER, POWER	

DISPLAY

DISPLAY

MAIN

Ref. No.	Part No.	Description	Remark			
< COIL >						
L401	1-410-509-11	INDUCTOR 10uH				
< TRANSISTOR >						
Q201	8-729-900-63	TRANSISTOR DTA124ES				
Q202	8-729-900-36	TRANSISTOR DTC124ES				
Q231	8-729-900-36	TRANSISTOR DTC124ES				
< RESISTOR >						
R200	1-247-863-91	CARBON 22K	5%	1/4W		
R201	1-247-903-00	CARBON 1M	5%	1/4W		
R202	1-249-429-11	CARBON 10K	5%	1/4W		
R203	1-249-429-11	CARBON 10K	5%	1/4W		
R204	1-249-425-11	CARBON 4.7K	5%	1/4W	F	
R205	1-249-441-11	CARBON 100K	5%	1/4W		
R207	1-249-429-11	CARBON 10K	5%	1/4W		
R211	1-247-863-91	CARBON 22K	5%	1/4W		
R212	1-247-863-91	CARBON 22K	5%	1/4W		
R213	1-247-863-91	CARBON 22K	5%	1/4W		
R214	1-247-863-91	CARBON 22K	5%	1/4W		
R216	1-247-863-91	CARBON 22K	5%	1/4W		
R221	1-247-807-31	CARBON 100	5%	1/4W		
R222	1-247-807-31	CARBON 100	5%	1/4W		
R223	1-247-807-31	CARBON 100	5%	1/4W		
R224	1-247-807-31	CARBON 100	5%	1/4W		
R225	1-247-807-31	CARBON 100	5%	1/4W		
R226	1-249-441-11	CARBON 100K	5%	1/4W		
R227	1-249-441-11	CARBON 100K	5%	1/4W		
R228	1-249-412-11	CARBON 390	5%	1/4W	F	
R231	1-249-427-11	CARBON 6.8K	5%	1/4W	F	
R232	1-249-411-11	CARBON 330	5%	1/4W		
R233	1-249-413-11	CARBON 470	5%	1/4W	F	
R234	1-249-415-11	CARBON 680	5%	1/4W	F	
R235	1-249-417-11	CARBON 1K	5%	1/4W	F	
R236	1-249-419-11	CARBON 1.5K	5%	1/4W	F	
R270	1-247-807-31	CARBON 100	5%	1/4W		
R283	1-249-427-11	CARBON 6.8K	5%	1/4W	F	
R284	1-249-427-11	CARBON 6.8K	5%	1/4W	F	
R286	1-249-437-11	CARBON 47K	5%	1/4W		
R420	1-249-415-11	CARBON 680	5%	1/4W	F	
R421	1-249-430-11	CARBON 12K	5%	1/4W		
R422	1-249-422-11	CARBON 2.7K	5%	1/4W	F	
R423	1-247-903-00	CARBON 1M	5%	1/4W		
R424	1-247-903-00	CARBON 1M	5%	1/4W		
R470	1-249-415-11	CARBON 680	5%	1/4W	F	
R471	1-249-430-11	CARBON 12K	5%	1/4W		
R472	1-249-422-11	CARBON 2.7K	5%	1/4W	F	
R473	1-247-903-00	CARBON 1M	5%	1/4W		
R474	1-247-903-00	CARBON 1M	5%	1/4W		
< VARIABLE RESISTOR >						
RV421	1-225-660-11	RES, VAR 100K/100K (BASS)				
RV422	1-225-659-11	RES, VAR 125K/125K (TREBLE)				
RV423	1-225-658-11	RES, VAR 100K/100K (BALANCE)				
< SWITCH >						
S209	1-554-937-11	SWITCH, KEY BOARD (TUNING -)				

Ref. No.	Part No.	Description	Remark		
S210	1-554-937-11	SWITCH, KEY BOARD (TUNING +)			
S214	1-554-937-11	SWITCH, KEY BOARD (FM)			
S215	1-554-937-11	SWITCH, KEY BOARD (AM)			
S216	1-554-937-11	SWITCH, KEY BOARD (MEMORY)			
S217	1-554-937-11	SWITCH, KEY BOARD (SURROUND ON/OFF)			
S218	1-554-937-11	SWITCH, KEY BOARD (SET UP)			
S219	1-554-937-11	SWITCH, KEY BOARD (EFFECT, DELAY TIME)			
S229	1-554-937-11	SWITCH, KEY BOARD (SHIFT)			
S238	1-554-937-11	SWITCH, KEY BOARD (SURROUND MODE)			
< VIBRATOR >					
X201	1-577-101-11	VIBRATOR, CERAMIC (4.19MHZ)			

*	A-4414-900-A	MAIN BOARD, COMPLETE			

	3-905-609-01	SCREW (TRANSISTOR)			
	4-210-380-01	RIVET, NYLON			
	7-685-872-09	SCREW +BVTT 3X8 (S)			
< CAPACITOR >					
C302	1-126-934-11	ELECT	220uF	20%	16V
C303	1-130-494-11	MYLAR	0.082uF	5%	50V
C304	1-137-367-11	FILM	0.0033uF	5%	50V
C305	1-130-494-11	MYLAR	0.082uF	5%	50V
C306	1-126-959-11	ELECT	0.47uF	20%	50V
C307	1-126-964-11	ELECT	10uF	20%	50V
C308	1-126-964-11	ELECT	10uF	20%	50V
C309	1-162-291-31	CERAMIC	560PF	10%	50V
C310	1-126-962-11	ELECT	3.3uF	20%	50V
C311	1-126-961-11	ELECT	2.2uF	20%	50V
C312	1-126-934-11	ELECT	220uF	20%	16V
C313	1-126-934-11	ELECT	220uF	20%	16V
C314	1-136-165-00	FILM	0.1uF	5%	50V
C316	1-124-252-00	ELECT	0.33uF	20%	50V
C317	1-126-933-11	ELECT	100uF	20%	16V
C318	1-136-357-11	FILM	680PF	5%	50V
C322	1-126-962-11	ELECT	3.3uF	20%	50V
C323	1-136-173-00	FILM	0.47uF	5%	50V
C324	1-126-967-11	ELECT	47uF	20%	16V
C325	1-136-165-00	FILM	0.1uF	5%	50V
C326	1-136-165-00	FILM	0.1uF	5%	50V
C327	1-126-959-11	ELECT	0.47uF	20%	50V
C328	1-126-963-11	ELECT	4.7uF	20%	50V
C329	1-126-959-11	ELECT	0.47uF	20%	50V
C330	1-126-963-11	ELECT	4.7uF	20%	50V
C331	1-124-250-11	ELECT	0.15uF	20%	50V
C332	1-126-962-11	ELECT	3.3uF	20%	50V
C333	1-124-250-11	ELECT	0.15uF	20%	50V
C334	1-137-372-11	FILM	0.022uF	5%	50V
C335	1-136-161-00	FILM	0.047uF	5%	50V
C336	1-126-934-11	ELECT	220uF	20%	16V
C337	1-126-964-11	ELECT	10uF	20%	50V
C338	1-126-964-11	ELECT	10uF	20%	50V
C339	1-126-964-11	ELECT	10uF	20%	50V
C340	1-126-964-11	ELECT	10uF	20%	50V
C341	1-126-934-11	ELECT	220uF	20%	16V

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C342	1-126-962-11	ELECT	3.3uF	20%	50V	C770	1-162-286-21	CERAMIC	220PF	10%	50V
C343	1-126-962-11	ELECT	3.3uF	20%	50V						
C344	1-136-165-00	FILM	0.1uF	5%	50V	C801	1-104-664-11	ELECT	47uF	20%	25V
C345	1-136-165-00	FILM	0.1uF	5%	50V	C802	1-104-664-11	ELECT	47uF	20%	25V
						C803	1-107-766-11	ELECT(BLOCK)	8200uF	20%	71V
C346	1-126-959-11	ELECT	0.47uF	20%	50V	C804	1-107-766-11	ELECT(BLOCK)	8200uF	20%	71V
C347	1-126-963-11	ELECT	4.7uF	20%	50V	C805	1-137-420-11	FILM	0.047uF	10%	100V
C348	1-126-959-11	ELECT	0.47uF	20%	50V						
C349	1-126-963-11	ELECT	4.7uF	20%	50V	C806	1-137-420-11	FILM	0.047uF	10%	100V
C350	1-124-250-11	ELECT	0.15uF	20%	50V	C807	1-104-664-11	ELECT	47uF	20%	25V
						C808	1-104-664-11	ELECT	47uF	20%	25V
C351	1-126-962-11	ELECT	3.3uF	20%	50V	C809	1-126-960-11	ELECT	1uF	20%	50V
C352	1-124-250-11	ELECT	0.15uF	20%	50V	C810	1-126-960-11	ELECT	1uF	20%	50V
C353	1-164-159-21	CERAMIC	0.1uF		50V						
C354	1-164-159-21	CERAMIC	0.1uF		50V	C811	1-126-942-61	ELECT	1000uF	20%	25V
C355	1-164-159-21	CERAMIC	0.1uF		50V	C812	1-126-942-61	ELECT	1000uF	20%	25V
						C813	1-101-001-00	CERAMIC	0.001uF		50V
C356	1-164-159-21	CERAMIC	0.1uF		50V	C814	1-101-001-00	CERAMIC	0.001uF		50V
C357	1-164-159-21	CERAMIC	0.1uF		50V	C820	1-161-494-00	CERAMIC	0.022uF		25V
C359	1-126-963-11	ELECT	4.7uF	20%	50V						
C360	1-126-963-11	ELECT	4.7uF	20%	50V	C821	1-161-494-00	CERAMIC	0.022uF		25V
C363	1-164-159-21	CERAMIC	0.1uF		50V	C822	1-104-664-11	ELECT	47uF	20%	25V
						C823	1-104-664-11	ELECT	47uF	20%	25V
C365	1-126-966-11	ELECT	33uF	20%	16V	C950	1-126-767-11	ELECT	1000uF	20%	16V
C366	1-164-159-21	CERAMIC	0.1uF		50V	C951	1-164-097-11	CERAMIC	0.022uF		50V
C406	1-164-159-21	CERAMIC	0.1uF		50V						
C408	1-162-294-31	CERAMIC	0.001uF	10%	50V	C952	1-126-960-11	ELECT	1uF	20%	50V
C412	1-162-291-31	CERAMIC	560PF	10%	50V	C953	1-124-464-11	ELECT	0.22uF	20%	50V
						C954	1-126-096-11	ELECT	10uF	20%	35V
C413	1-164-159-21	CERAMIC	0.1uF		50V	C955	1-164-159-21	CERAMIC	0.1uF		50V
C415	1-164-159-21	CERAMIC	0.1uF		50V						
C416	1-164-159-21	CERAMIC	0.1uF		50V	< CONNECTOR >					
C434	1-162-286-21	CERAMIC	220PF	10%	50V	* CN706	1-764-321-11	PIN, CONNECTOR (PC BOARD) 4P			
C435	1-162-286-21	CERAMIC	220PF	10%	50V	CNP702	1-764-474-11	PIN, CONNECTOR (PC BOARD) 5P			
C602	1-162-282-31	CERAMIC	100PF	10%	50V	CNS204	1-568-742-11	SOCKET, CONNECTOR 23P			
C603	1-104-665-11	ELECT	100uF	20%	10V	CNS301	1-568-442-11	SOCKET, CONNECTOR 9P			
C605	1-102-233-00	CERAMIC	33PF	10%	500V	CNS701	1-568-439-11	SOCKET, CONNECTOR 7P			
C610	1-126-967-11	ELECT	47uF	20%	16V	* CNS802	1-564-778-11	PLUG, CONNECTOR (2.5MM) 4P			
C611	1-137-372-11	FILM	0.022uF	5%	50V						
						< DIODE >					
C620	1-162-286-21	CERAMIC	220PF	10%	50V	D610	8-719-911-19	DIODE 1SS119-25			
C652	1-162-282-31	CERAMIC	100PF	10%	50V	D710	8-719-911-19	DIODE 1SS119-25			
C653	1-104-665-11	ELECT	100uF	20%	10V	D721	8-719-815-85	DIODE 1S1585			
C655	1-102-233-00	CERAMIC	33PF	10%	500V	D722	8-719-815-85	DIODE 1S1585			
C660	1-126-967-11	ELECT	47uF	20%	16V	D723	8-719-911-19	DIODE 1SS119-25			
C661	1-137-372-11	FILM	0.022uF	5%	50V	D724	8-719-911-19	DIODE 1SS119-25			
C670	1-162-286-21	CERAMIC	220PF	10%	50V	D725	8-719-911-19	DIODE 1SS119-25			
C702	1-162-282-31	CERAMIC	100PF	10%	50V	D801	8-719-936-37	DIODE HZS24-1LTD			
C703	1-104-665-11	ELECT	100uF	20%	10V	D802	8-719-302-38	DIODE RBV-602-01			
C705	1-102-233-00	CERAMIC	33PF	10%	500V	D804	8-719-923-38	DIODE MTZJ-T-77-5.6B			
C710	1-126-967-11	ELECT	47uF	20%	16V	D810	8-719-200-82	DIODE 11ES2			
C711	1-137-372-11	FILM	0.022uF	5%	50V	D811	8-719-200-82	DIODE 11ES2			
C720	1-162-286-21	CERAMIC	220PF	10%	50V	D812	8-719-200-82	DIODE 11ES2			
C721	1-126-934-11	ELECT	220uF	20%	10V	D813	8-719-200-82	DIODE 11ES2			
C722	1-126-964-11	ELECT	10uF	20%	50V	D814	8-719-911-19	DIODE 1SS119-25			
C740	1-128-562-11	ELECT	47uF	20%	100V	D815	8-719-911-19	DIODE 1SS119-25			
C741	1-128-562-11	ELECT	47uF	20%	100V	D817	8-719-001-30	DIODE UZL-9H3			
C742	1-126-925-11	ELECT	470uF	20%	10V	D818	8-719-911-19	DIODE 1SS119-25			
C743	1-126-925-11	ELECT	470uF	20%	10V	D820	8-719-200-82	DIODE 11ES2			
C752	1-162-282-31	CERAMIC	100PF	10%	50V	D821	8-719-200-82	DIODE 11ES2			
C753	1-104-665-11	ELECT	100uF	20%	10V	D822	8-719-200-82	DIODE 11ES2			
C755	1-102-233-00	CERAMIC	33PF	10%	500V	D823	8-719-200-82	DIODE 11ES2			
C760	1-126-967-11	ELECT	47uF	20%	16V						
C761	1-137-372-11	FILM	0.022uF	5%	50V						

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D901	8-719-911-19	DIODE 1SS119-25		Q752	8-729-141-30	TRANSISTOR 2SC3623A-LK	
		< EARTH >		Q753	8-749-010-25	IC MN2488-OPY-M	
* G201	1-537-738-21	TERMINAL, EARTH		Q754	8-749-010-26	IC MP1620-OPY-M	
* G202	1-537-738-21	TERMINAL, EARTH		Q770	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
* G203	1-537-738-21	TERMINAL, EARTH		Q801	8-729-140-97	TRANSISTOR 2SB734-34	
		< IC >		Q802	8-729-119-78	TRANSISTOR 2SC2785-HFE	
IC300	8-759-442-97	IC LV1016		Q808	8-729-180-92	TRANSISTOR 2SD809-K	
IC301	8-759-442-96	IC LA2786		Q809	8-729-119-78	TRANSISTOR 2SC2785-HFE	
IC302	8-759-636-74	IC M5218AP-22		Q951	8-729-026-68	TRANSISTOR 2SD2525(TP)	
IC401	8-759-805-14	IC LC7822				< RESISTOR >	
IC701	8-759-326-52	IC uPC2581V		△ R298	1-249-387-11	CARBON 3.3 5% 1/4W F	
IC702	8-759-326-52	IC uPC2581V		△ R299	1-249-387-11	CARBON 3.3 5% 1/4W F	
IC801	8-759-231-58	IC TA7812S		R300	1-247-903-00	CARBON 1M 5% 1/4W	
IC802	8-759-604-45	IC M5F79M12L		R301	1-249-421-11	CARBON 2.2K 5% 1/4W F	
IC950	8-759-333-83	IC NJM2103D		R302	1-249-421-11	CARBON 2.2K 5% 1/4W F	
		< JACK >		R303	1-249-439-11	CARBON 68K 5% 1/4W	
J401	1-774-843-11	JACK, PIN 1P (MIX AUDIO OUT)		R304	1-249-441-11	CARBON 100K 5% 1/4W	
J402	1-774-005-21	JACK, PIN 6P (TAPE/MD, CD)		R306	1-249-436-11	CARBON 39K 5% 1/4W	
J403	1-770-615-21	JACK, PIN 6P (VIDEO, TV/DBS)		R307	1-247-862-11	CARBON 20K 5% 1/4W	
		< COIL >		R308	1-249-421-11	CARBON 2.2K 5% 1/4W F	
L301	1-410-509-11	INDUCTOR 10uH		R309	1-249-421-11	CARBON 2.2K 5% 1/4W F	
L302	1-410-509-11	INDUCTOR 10uH		R352	1-249-441-11	CARBON 100K 5% 1/4W	
L601	1-420-872-00	COIL, AIR-CORE		R353	1-249-425-11	CARBON 4.7K 5% 1/4W F	
L651	1-420-872-00	COIL, AIR-CORE		R354	1-249-425-11	CARBON 4.7K 5% 1/4W F	
L701	1-420-872-00	COIL, AIR-CORE		R355	1-249-425-11	CARBON 4.7K 5% 1/4W F	
L751	1-420-872-00	COIL, AIR-CORE		R356	1-249-425-11	CARBON 4.7K 5% 1/4W F	
		< TRANSISTOR >		R357	1-249-441-11	CARBON 100K 5% 1/4W	
Q303	8-729-141-30	TRANSISTOR 2SC3623A-LK		R358	1-249-441-11	CARBON 100K 5% 1/4W	
Q304	8-729-141-30	TRANSISTOR 2SC3623A-LK		R359	1-249-425-11	CARBON 4.7K 5% 1/4W F	
Q307	8-729-141-30	TRANSISTOR 2SC3623A-LK		R360	1-247-843-11	CARBON 3.3K 5% 1/4W	
Q308	8-729-141-30	TRANSISTOR 2SC3623A-LK		R361	1-249-429-11	CARBON 10K 5% 1/4W	
Q601	8-729-119-76	TRANSISTOR 2SA1175-HFE		R362	1-249-429-11	CARBON 10K 5% 1/4W	
Q602	8-729-141-30	TRANSISTOR 2SC3623A-LK		R363	1-249-411-11	CARBON 330 5% 1/4W	
Q603	8-749-010-25	IC MN2488-OPY-M		R402	1-249-421-11	CARBON 2.2K 5% 1/4W F	
Q604	8-749-010-26	IC MP1620-OPY-M		R403	1-249-417-11	CARBON 1K 5% 1/4W F	
Q610	8-729-119-78	TRANSISTOR 2SC2785-HFE		R404	1-249-417-11	CARBON 1K 5% 1/4W F	
Q620	8-729-140-82	TRANSISTOR 2SA988-PAFAEA		R405	1-249-417-11	CARBON 1K 5% 1/4W F	
Q651	8-729-119-76	TRANSISTOR 2SA1175-HFE		R406	1-249-417-11	CARBON 1K 5% 1/4W F	
Q652	8-729-141-30	TRANSISTOR 2SC3623A-LK		R407	1-249-417-11	CARBON 1K 5% 1/4W F	
Q653	8-749-010-25	IC MN2488-OPY-M		R408	1-249-429-11	CARBON 10K 5% 1/4W	
Q654	8-749-010-26	IC MP1620-OPY-M		R409	1-249-417-11	CARBON 1K 5% 1/4W F	
Q670	8-729-140-82	TRANSISTOR 2SA988-PAFAEA		R414	1-249-425-11	CARBON 4.7K 5% 1/4W F	
Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE		R415	1-249-417-11	CARBON 1K 5% 1/4W F	
Q702	8-729-141-30	TRANSISTOR 2SC3623A-LK		R420	1-249-441-11	CARBON 100K 5% 1/4W	
Q703	8-749-010-25	IC MN2488-OPY-M		R435	1-249-418-11	CARBON 1.2K 5% 1/4W F	
Q704	8-749-010-26	IC MP1620-OPY-M		R442	1-249-418-11	CARBON 1.2K 5% 1/4W F	
Q710	8-729-119-78	TRANSISTOR 2SC2785-HFE		R443	1-249-418-11	CARBON 1.2K 5% 1/4W F	
Q720	8-729-140-82	TRANSISTOR 2SA988-PAFAEA		R447	1-249-416-11	CARBON 820 5% 1/4W F	
Q721	8-729-140-82	TRANSISTOR 2SA988-PAFAEA		R448	1-249-429-11	CARBON 10K 5% 1/4W	
Q722	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA		R449	1-247-863-91	CARBON 22K 5% 1/4W	
Q723	8-729-119-78	TRANSISTOR 2SC2785-HFE		R452	1-249-421-11	CARBON 2.2K 5% 1/4W F	
Q751	8-729-119-76	TRANSISTOR 2SA1175-HFE		R453	1-249-417-11	CARBON 1K 5% 1/4W F	
				R454	1-249-417-11	CARBON 1K 5% 1/4W F	
				R455	1-249-417-11	CARBON 1K 5% 1/4W F	
				R456	1-249-417-11	CARBON 1K 5% 1/4W F	
				R457	1-249-417-11	CARBON 1K 5% 1/4W F	
				R458	1-249-429-11	CARBON 10K 5% 1/4W	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

MAIN	POWER SW	PRIMARY	SECONDARY
SPEAKER SW	STANDBY	VOL-TONE	

Ref. No.	Part No.	Description	Remark
TM701	1-537-240-11	TERMINAL BOARD (CHECKER PIN) (SPEAKER FRONT)	
		< TUNER >	
TU001	1-233-593-11	ENCAPSULATED COMPONENT	
		< VIBRATOR >	
X301	1-579-952-21	VIBRATOR, CERAMIC (8MHz)	

*	1-670-378-11	POWER SW BOARD *****	
		< SWITCH >	
S200	1-554-937-11	SWITCH, KEY BOARD (I/⏻)	

*	1-670-376-11	PRIMARY BOARD *****	
	1-533-233-21	HOLDER, FUSE	
		< FUSE >	
△F901	1-576-109-11	FUSE (5A 125V)	
		< TRANSFORMER >	
△T901	1-431-285-31	TRANSFORMER POWER	

*	1-670-375-11	SECONDARY BOARD *****	
		< CONNECTOR >	
CNP801	1-764-480-11	PIN, CONNECTOR (PC BOARD) 11P	
		< RESISTOR >	
△R810	1-249-381-11	CARBON 1 5% 1/4W F	
△R811	1-249-381-11	CARBON 1 5% 1/4W F	

*	1-670-374-11	SPEAKER SW BOARD *****	
		< JACK >	
J741	1-750-733-11	JACK (LARGE TYPE)(PHONES)	
		< RESISTOR >	
R732	1-247-753-11	CARBON 1.2K 5% 1/2W	
R733	1-247-753-11	CARBON 1.2K 5% 1/2W	
R782	1-247-753-11	CARBON 1.2K 5% 1/2W	
R783	1-247-753-11	CARBON 1.2K 5% 1/2W	
		< SWITCH >	
S701	1-771-436-11	SWITCH, PUSH (SPEAKERS)	

Ref. No.	Part No.	Description	Remark
*	1-670-373-11	STANDBY BOARD *****	
		< CONNECTOR >	
△CJ902	1-540-057-11	OUTLET, AC (POLAR)(AC OUTLET)	
CNP901	1-564-321-00	PIN, CONNECTOR 2P	
		< DIODE >	
D816	8-719-911-19	DIODE 1SS119-25	
		< EARTH >	
* G900	1-537-738-21	TERMINAL, EARTH	
		< RESISTOR >	
△R901	1-202-725-00	SOLID 3.3M 10% 1/2W	
		< RELAY >	
△RY901	1-515-720-11	RELAY	
		< TRANSFORMER >	
△T902	1-450-361-11	TRANSFORMER, POWER	

*	A-4414-896-A	VOL-TONE BOARD *****	
		< CAPACITOR >	
C420	1-162-207-31	CERAMIC 22PF 5% 50V	
C425	1-126-795-11	ELECT 10uF 20% 25V	
C426	1-126-795-11	ELECT 10uF 20% 25V	
C427	1-124-252-00	ELECT 0.33uF 20% 50V	
C428	1-130-489-00	MYLAR 0.033uF 5% 50V	
C429	1-102-973-00	CERAMIC 100PF 5% 50V	
C430	1-126-301-11	ELECT 1uF 20% 50V	
C431	1-126-301-11	ELECT 1uF 20% 50V	
C432	1-126-795-11	ELECT 10uF 20% 25V	
C433	1-126-795-11	ELECT 10uF 20% 25V	
C470	1-162-207-31	CERAMIC 22PF 5% 50V	
C475	1-126-795-11	ELECT 10uF 20% 25V	
C476	1-126-795-11	ELECT 10uF 20% 25V	
C477	1-124-252-00	ELECT 0.33uF 20% 50V	
C478	1-130-489-00	MYLAR 0.033uF 5% 50V	
C479	1-102-973-00	CERAMIC 100PF 5% 50V	
C492	1-124-464-11	ELECT 0.22uF 20% 50V	
C601	1-126-163-11	ELECT 4.7uF 20% 50V	
C651	1-126-163-11	ELECT 4.7uF 20% 50V	
C701	1-126-163-11	ELECT 4.7uF 20% 50V	
C751	1-126-163-11	ELECT 4.7uF 20% 50V	
		< CONNECTOR >	
CNS402	1-568-439-11	SOCKET, CONNECTOR 7P	
CNS403	1-568-442-11	SOCKET, CONNECTOR 9P	
		< DIODE >	
D421	8-719-911-19	DIODE 1SS119-25	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
< IC >			
IC404	8-759-636-74	IC M5218AP-22	
< TRANSISTOR >			
Q401	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q402	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q451	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q452	8-729-141-30	TRANSISTOR 2SC3623A-LK	
< RESISTOR >			
R425	1-249-429-11	CARBON 10K 5% 1/4W	
R426	1-249-439-11	CARBON 68K 5% 1/4W	
R427	1-249-417-11	CARBON 1K 5% 1/4W F	
R430	1-249-437-11	CARBON 47K 5% 1/4W	
R431	1-247-843-11	CARBON 3.3K 5% 1/4W	
R432	1-247-883-00	CARBON 150K 5% 1/4W	
R433	1-249-427-11	CARBON 6.8K 5% 1/4W F	
R434	1-249-413-11	CARBON 470 5% 1/4W F	
R438	1-249-441-11	CARBON 100K 5% 1/4W	
R441	1-249-441-11	CARBON 100K 5% 1/4W	
R444	1-247-903-00	CARBON 1M 5% 1/4W	
R464	1-247-903-00	CARBON 1M 5% 1/4W	
R469	1-247-903-00	CARBON 1M 5% 1/4W	
R475	1-249-429-11	CARBON 10K 5% 1/4W	
R476	1-249-439-11	CARBON 68K 5% 1/4W	
R477	1-249-417-11	CARBON 1K 5% 1/4W F	
R480	1-249-437-11	CARBON 47K 5% 1/4W	
R481	1-247-843-11	CARBON 3.3K 5% 1/4W	
R482	1-247-883-00	CARBON 150K 5% 1/4W	
R483	1-249-427-11	CARBON 6.8K 5% 1/4W F	
R484	1-249-413-11	CARBON 470 5% 1/4W F	
R491	1-249-441-11	CARBON 100K 5% 1/4W	
R492	1-247-903-00	CARBON 1M 5% 1/4W	
R494	1-247-903-00	CARBON 1M 5% 1/4W	
< VARIABLE RESISTOR >			
RV404	1-225-229-11	RES, VAR, CARBON 100KX4 (MASTER VOLUME)	

MISCELLANEOUS			

9	1-782-100-11	WIRE (FLAT TYPE) (23 CORE)	
13	1-782-074-11	WIRE (FLAT TYPE) (7 CORE)	
14	1-782-075-11	WIRE (FLAT TYPE) (9 CORE)	
△ 56	1-690-609-21	CORD, POWER	
FL201	1-517-662-11	INDICATOR TUBE, FLUORESCENT	
Q603	8-749-010-25	IC MN2488-OPY-M	
Q604	8-749-010-26	IC MP1620-OPY-M	
Q653	8-749-010-25	IC MN2488-OPY-M	
Q654	8-749-010-26	IC MP1620-OPY-M	
Q703	8-749-010-25	IC MN2488-OPY-M	
Q704	8-749-010-26	IC MP1620-OPY-M	
Q753	8-749-010-25	IC MN2488-OPY-M	
Q754	8-749-010-26	IC MP1620-OPY-M	
△ T901	1-431-258-11	TRANSFORMER, POWER	

Ref. No.	Part No.	Description	Remark
ACCESSORIES & PACKING MATERIALS			

	1-475-710-11	COMMANDER, STANDARD (RM-U302)	
	1-501-374-11	ANTENNA, LOOP	
	1-501-659-41	ANTENNA (FM)	
	1-501-721-11	ANTENNA (LOOP)	
	3-862-695-11	MANUAL, INSTRUCTION (ENGLISH)	
	4-981-643-01	COVER, BATTERY (For RM-U302)	

HARDWARE LIST			

#1	7-682-547-04	SCREW +B 3X6	
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	

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